



SEMINAR

Eye movements as pointers to mnemonic and linguistic processes in healthy and pathologically aged populations

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Speaker

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Abstract: Overt attention, as expressed through eye-movement behaviour, provides a direct window into the cognitive processes that underpin human thought. In this talk, I present two strands of research that position attention not merely as a sensory tool, but as a central pillar of cognition. First, I demonstrate how overt attention, situated in real-world, ecologically valid contexts, serves as a robust scaffold for memory. By accessing high-level semantic information in peripheral (extrafoveal) vision, attention supports successful short-term recall. Crucially, this mechanism remains preserved across the lifespan, acting as a vital cognitive bridge even in the presence of pathological ageing. Second, I propose that overt attention expresses a "language of vision", a universal, syntax-independent instance of the language of thought. I present evidence from English, Portuguese, and Japanese speakers who, despite structural differences in their syntax (e.g., word order), display nearly identical scan patterns when describing objects in scenes. These findings suggest that beneath the diversity of spoken language lies a universal visual grammar that guides how we perceive and describe the world around us.

Bio Sketch: Moreno I. Coco is an Associate Professor at Sapienza University of Rome, where his interdisciplinary research investigates the cognitive architecture of vision, memory, language and human interaction. His research program explores the fundamental interplay of cognitive processes across the lifespan, examining their resilience and decline in healthy and pathological ageing. Methodologically, he employs a multidisciplinary approach that integrates computational modelling with the synchronous recording of eye movements and neuroimaging (EEG, fMRI), as well as dual-eye-tracking (hyperscanning) to quantify the dynamics of social behaviour and joint action.

Dr Coco earned his PhD in Informatics from the University of Edinburgh and held subsequent academic appointments and research fellowships at the University of East London, the University of Lisbon, and the University of Edinburgh. He is an active developer of statistical software for complex data analysis, including R-packages for cross-recurrence quantification (CRQA) and mouse-tracking.